Northeast Coastal and Barrier Network
Protocol Development Summary
(Sept. 2005)

Protocol: Salt Marsh Vegetation Monitoring

Parks Where Protocol will be Implemented: CACO, GATE, FIIS, ASIS, SAHI,
                                                GEWA, COLO

Justification/Issues being addressed:
Salt marsh ecosystems provide habitat for a variety of species including recreational and commercial fishes, forage species, migratory shorebirds and waterbirds, as well as acting as erosion buffers and filters of nutrient inputs by intercepting and absorbing land derived runoff.   A large percentage of the nations salt marshes have been altered, degraded, and lost over the past century. Salt marshes have a long history of alteration from extensive networks of ditching for mosquito control or salt hay farming purposes, from restriction of tidal exchange by roads, causeways, bridges, and dikes, (Daiber 1986, Roman et al. 2000). As the coastal corridor becomes urbanized watersheds become increasingly developed and salt marsh acreage declines and becomes fragmented. Urbanization leads to increases in septic and sewer systems, air pollution, and intensified recreational use of coastal areas.

Seven out of eight Northeast Coastal and Barrier Network parks identified salt marsh monitoring and restoration in either their General Management or Resource Management Plans. The Network's science committee also identified salt marsh as a key ecosystem to be included in the Network's Vital Signs Monitoring program. Salt marshes are critical because they: (1) buffer coastlines from erosion, (2) reduce nutrient input to estuarine and coastal ecosystems by filtering land-derived runoff, and (3) act as nursery grounds for important commercial and recreational fishes and species integral to the estuarine trophic food web. Salt marsh communities are sensitive to disturbance and perturbations (storms, geomorphic processes, nutrient loading, watershed development, and human activities such as tidal restrictions and ditching). By developing and implementing a protocol for long-term monitoring of salt marsh vegetation within NCBN parks, changes in salt marshes will be tracked over time and our understanding of the dynamics of this ecosystem further advanced.

Monitoring Goals, Questions and Objectives to be addressed by the Protocol:
NCBN Goal:
To monitor salt marsh condition in NCBN parks in order to provide managers with information to make better informed management decisions and to work more effectively with other agencies and individuals for the benefit of these park resources.

Monitoring Question:
Is salt marsh vegetation community structure (species composition and abundance) changing over time?

Monitoring Objective:

Determine long term trends in species composition and abundance in salt marsh vegetation in selected NCBN park salt marshes.

Vital Signs:
Salt marsh vegetation community structure

Measures:
percent cover, species composition, abundance

Justification:
Baseline data on salt marsh vegetation community composition and structure will assist with natural resource damage assessment and mitigation in the event of human-induced or natural catastrophic event such as oil spills or storms. A large percentage of the Nation's salt marshes have been altered, degraded, and lost over the past century. Restoration and subsequent monitoring of salt marsh habitat has recently become a management tool to rectify past environmental change.

Basic Approach:
Permanent plots to monitor salt marsh vegetation will be established following the Salt Marsh Vegetation Monitoring protocol developed as part of the Cape Cod National Seashore Prototype Monitoring Program (Roman et al. 2001). This protocol is being revised to meet the needs and standards of the Northeast Coastal and Barrier Network monitoring program. Salt marsh vegetation monitoring sites will be established at seven NCBN parks. At each monitoring site, 15 to 20 permanent plots will be established. The point-intercept method will be used to survey herbaceous vegetation. This method provides an unbiased, objective, and repeatable method to measure species composition and relative abundance (Kent & Coker 1992, Smartt et al. 1974). Vegetation sampling will be conducted in August to early September, during the peak growing season.

Principal Investigators and NPS Lead:
Protocol development will be completed through cooperative agreement with the Graduate School of Oceanography, University of Rhode Island, Narragansett, RI 02882
Principal Investigator: Mary-Jane James-Piri, Ph.D.
NPS Leads: Bryan Milstead and Sara Stevens

Development Schedule, Budget, and Expected Interim Products:
The Cape Cod NS Salt Marsh Vegetation Monitoring protocol has been implemented in seven USFWS sites along the Atlantic seaboard, as well as at Cape Cod National Seashore a prototype park within the NCBN. Therefore, protocol development for NCBN parks has not required field research and has consisted primarily of converting the existing protocol to meet NPS standards. The draft NCBN Salt Marsh Vegetation Monitoring protocol has been completed for external peer review as part of the NCBN Phase 3 Report (draft December 2004). After peer review, revision and approval, implementation of the protocol will occur in 2005-2006. The Network budgeted $222,000 for this project in FY 2002 for the development and testing of both the nekton

and salt marsh vegetation protocols. An additional $50,055 was added to the existing cooperative agreement in FY 2005.

Literature Cited

Daiber, F.C. 1986. Conservation of Tidal Marshes. Van Nostrand Reinhold Co., New York.

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Roman, C.T., M.J. James-Pirri, and J. F. Heltshe. 2001. Monitoring Salt Marsh Vegetation: A Protocol for the Long-term Coastal Ecosystem Monitoring Program at Cape Cod National Seashore. Coordinated by the USGS Patuxent Wildlife Research Center, Coastal Research Field Station at the University of Rhode Island, Narragansett, RI 02882.

Roman, C.T., N. Jaworski, F.T. Short, S. Findlay, and R.S. Warren. 2000. Estuaries of the northeastern United States: habitat and land use signatures. Estuaries 23: 743-764.

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